

REMARKS

This Amendment responds to the office action mailed January 11, 2005. Claims 1-21 are currently pending. Claims 1, 13, 18, and 20 have been Amended. Reconsideration is respectfully requested.

Claims 1 and 13 have been amended to delete the “providing” language in favor of language such as “emitting” and “imaging”, and these changes are not intended to be related to patentability. These claims have also been amended to recite that the imaging generates an image of the upper surface and the recess on the position-sensitive detector. These claims have been further amended in other respects for reasons unrelated to patentability.

Claims 18 and 20 have been amended to positively recite a position-sensitive detector. These claims have been further amended in other respects for reasons unrelated to patentability.

The Office Action includes a rejection of claim 1-21 under 35 U.S.C. 103(a) as allegedly being unpatentable over the Hiroi et al. publication (U.S. Patent Application Publication 2002/0100872) in view of the Todokoro et al. patent (U.S. Patent No. 6,646,262). This rejection is respectfully traversed.

Independent claims 1 and 13 recite, among other features, imaging secondary electrons emanating from the semiconductor arrangement within the extended object field with an electron microscopy optics onto a position-sensitive detector. Claims 18 and 20 recite, among other features, a position-sensitive detector arranged in an image plane. As described in paragraph 0058 of the present application, for example, a position-sensitive detector permits imaging an extended region of an object on the detector wherein each point within the extended region of the object is associated with a corresponding point on the detector surface of the position-sensitive detector such that a sharp image can be produced on the detector surface. An example of a position sensitive detector, as noted in paragraph 0058, is a CCD (charge coupled device) chip.

In contrast, the Hiroi et al. publication and the Todokoro et al. patent do not disclose devices comprising position-sensitive detectors. In particular, contrary to the Office’s suggestion, feature 16 shown in Figure 27 of the Hiroi et al. publication is not a position-sensitive detector; rather, detector 16 is understood to be a standard cup detector of the type used in conventional scanning electron microscopes (SEM), wherein the position information of an obtained image is derived from *knowledge of the scanning deflection* of a scanned electron beam. Paragraph 0172 of the Hiroi et al. publication states, “Numeral 16 denotes a

secondary electron detector.” There is no disclosure therein of the detector 16 being a position-sensitive detector.

In fact, detector 16 appears in multiple embodiments shown in the Hiroi et al. publication (Figs. 16, 19, 20, 21, and 27), and the associated descriptions are indicative of an SEM with a standard cup detector wherein position information is derived from knowledge of the scanning deflection of a scanned electron beam. For example, paragraph 0150 of the Hiroi et al. publication indicates that the apparatus shown in Figure 21 comprises, among other features, “a beam deflector 15 for effecting a scan with the electron beam and conducting imaging”, “a secondary electron detector 16”, “a deflection controller 47 for controlling the beam deflector 15 to conduct scanning with the electron beam”, “a stage 46 carrying the wafer holder 21 to scan and position the object 20”, and a “stage controller 50”. Paragraph 0150 also states,

For measuring the dimensions of the pattern in the image processor 25, there are needed data of the deflection value (scan value) of the electron beam supplied from the deflection controller 47 to the beam deflector 15 and the displacement value (travel value) representing the value of the travel of the stage effected by the stage controller 50. Therefore, data (position information) 221 of the deflection value (scan value) of the electron beam supplied from the deflection controller 47 to the beam deflector 15 and the displacement value (travel value) representing the value of the travel of the stage effected by the stage controller 50 are inputted to the image processor 25.

Thus, it is evident that the detector 16 of the Hiroi et al. device itself does not provide position information; rather, scan deflection values (as well as stage displacement values) are needed to provide position information.

The scanning (deflection) of the electron beam is also discussed at other sections of the Hiroi et al. publication, e.g., paragraphs 0094, 0105, 0117, 0122, 0142, 0145, 0148, 0156, 0159, 0170 and 0172. These sections are understood to be consistent with the above-described combination of a scanning electron beam and a conventional cup detector for detecting secondary electrons. It is noted, for example, that paragraph 0145 states, “Consecutive two-dimensional image signals are detected from the second electron detector 16, and converted to two-dimensional digital image signals by the A/D converter 24.” Statements such as these are understood to mean that two-dimensional image signals are derived from output from the detector 16 in conjunction with known deflection

information of the scanned electron beam, consistent with the description previously discussed above.

Accordingly, it is respectfully submitted that the Hiroi et al. publication does not disclose a position-sensitive detector as recited in the independent claims. The Todokoro et al. patent does not make up for this deficiency. For at least these reasons, withdrawal of the rejection against independent claims 1, 13, 18 and 20 and allowance of these claims are respectfully requested. The remaining dependent claims are allowable at least by virtue of dependency, and withdrawal of the rejection and allowance of these claims is also respectfully requested.

Moreover, dependent claims of the present application contain subject matter not disclosed in either of the applied references. For example, claim 6 recites that the illumination device comprises a photon source and that the primary energy beam comprises a photon beam. Claim 8 recites that the photon beam impinges on the upper surface at an angle between 10 degrees to 80 degrees. It is not seen where either the Hiroi et al. publication or the Todokoro et al. patent allegedly disclose this subject matter, and the Office action does not make any specific allegation in this regard. These claims are allowable at least for this additional reason. Should the Examiner disagree, the Examiner is respectfully requested to point out where this subject matter is allegedly disclosed in the applied references.

In light of the above amendments and remarks, the Applicant respectfully requests that the Examiner reconsider this application with a view towards allowance. The Examiner is invited to call the undersigned attorney if a telephone call could help resolve any remaining items.

Respectfully submitted,



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